

2020 NDOT Asphalt Field Technician / Binder & Emulsion Sampler Recertification

This is a five year recertification for those who have previously taken the Asphalt Field Technician I & II Training and the Binder/Emulsion Certification. Your responsibility is to read and understand this document and complete and pass the quiz at the end with a minimum score of 70%. After completion, e-mail your completed quiz to mike.reynolds@nebraska.gov. If you have any questions, feel free to contact any of the Quality Assurance Staff or the Bituminous Pavement Engineer listed below.

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Mix Types

We are currently using 5 main mix types and 1 base mix.



SPR:

High Recycle Mix (Up to 55% RAP)

For Low, Medium, Medium+ Volume Roadways

75% of NDOT Annual Tonnage

Improved In-Place Density

Increased Joint Density

Great Rut Resistance

High Strength Mix

SPH:

Heavy Truck Applications – Interstate, Expressways, and Large Volume Urban Corridors

Up to 35% RAP
High Angularity Aggregates
15% of NDOT Annual Tonnage

SPS:

Shoulder Mix
Very Economical
Designed to allow high RAP – Max. 65%

LC:

Leveling Course
Fine gradation mix for thin lift of asphalt
Can place 5/8"-1"+ Thick
Higher Binder Content
Helps Prevent Roller Bumps
Up to 35% RAP

SLX:

Placed 1-2" Thick (Fine Gradation)
Min. 20% 1/4" Crushed Rock Chips
20-35% Fractionated RAP
Protects underlying pavement

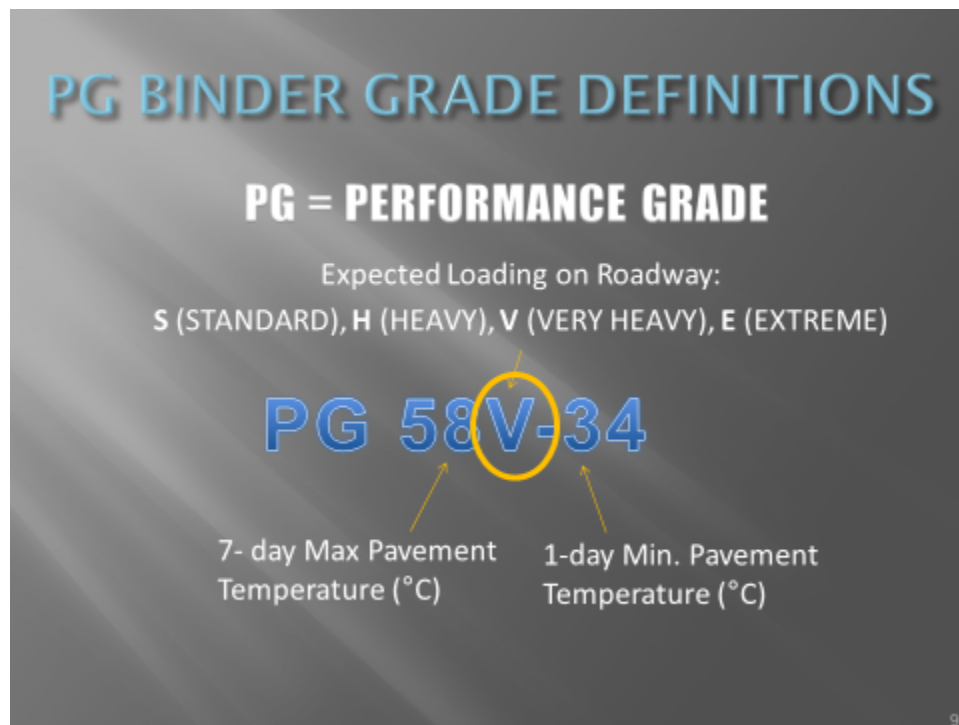
Base Mix SRM

Special (Warm) Reclamation Mix
Used as base in lieu of HLSS or Cold Foam
Typically 4-5" Lift
Coarser High Strength Mix
35%-65% RAP
0.9% Warm Mix Additive Required
Can compact at lower temperatures

PG Binder/Emulsion/Hydrated Lime - Warm Mix Additives

The PG Binder grades have changed from grades solely based on temperature to grades based on temperature and expected loading.

New projects will have the following possible grades: 58S-34, 58H-34, 58V-34 or 58E-34.



With the new grades, the contractor will still be allowed to blend grades only when transitioning to an asphalt mixture requiring a different grade of binder and if NDOT is notified and approves. The blended material must meet the specifications required by the NDOT Rheology Lab for the first sample. Every subsequent sample must meet the specified grades requirements.

Binder is sampled by the certified contractor representative in observance of NDOT staff in 1 two-quart container after a minimum of 1 gallon is poured to waste. The metal containers are available from the NDOT Supply Base. Samples are required 1 for every 200 tons or fraction thereof, of each type of binder used on the project – minimum 1 sample for each type of binder used on the project. Containers must be kept dry and free from contaminants. Do not allow spilled material on the container to be cleaned with any type of solvent. Binder samples must reach the Lincoln Rheology Lab within 10 days of being sampled. Print the SiteManager label and include it with the sample.

Emulsion is now sampled at a rate of 1 sample for each type of emulsion used on each project, regardless of the amount used on the project. One sample consists of 1 – one-quart sample

taken by the certified contractor representative in observance of NDOT inspection staff. The sample is taken after a minimum of one gallon is poured to waste. The plastic containers are available from the NDOT Supply Base. The containers must be kept dry and free from contaminants. Do not allow spilled material on the container to be cleaned with any type of solvent. Emulsion samples must reach the Lincoln Rheology Lab within 5 days of being sampled. Print the SiteManager label and include it with the sample.

The pay item for Hydrated Lime (used as a Binder Anti-strip agent) has been changed to Hydrated Lime/Warm Mix Asphalt and is paid 1 unit for each 1 ton Asphalt that contains anti-strip agents.

Random Sampling Schedule (RSS):

If you do not receive a RSS or it is lost or compromised, contact Dean Debutts for a new one at Dean.Debutts@nebraska.gov or 402-479-4809.

NEBRASKA DEPARTMENT OF TRANSPORTATION													
Asphaltic Concrete Pavement													
Project No:		NH-80-4(139)				Name of Road:							
Control No.		61429				Asphalt Weight:		65000					
		8 ft		12 ft		14 ft		16 ft					
Lot Number	Sublot Number	Ton to be Sampled		Distance from Edge	Distance from Edge	Distance from Edge	Distance from Edge	Distance to Core	FAA/CAA Cold Feed	Recuts: Distance to Core	Field Density	Joint Density*	TSR
		Lot	PJT										
1	1	611	611	7	4	8	15	-29		94			
1	2	1111	1111	0	10	9	5	-89		9		OUT	
1	3	2707	2707	3	12	2	15	-99		8			X
1	4	3066	3066	3	8	12	15	71		-2			
1	5	4239	4239	1	12	14	11	-80	X	20	X		
2	1	910	5910	0	10	3	0	-1		54		IN	
2	2	1513	6513	0	0	4	1	15		-93			
2	3	2294	7294	6	4	5	15	-43		-3			
2	4	3866	8866	0	12	8	6	-21	X	42	X		
2	5	4339	9339	6	1	9	4	8		-42			
3	1	539	10539	4	2	7	0	-77		39			
3	2	1521	11521	7	8	5	2	-62		-74		OUT	
3	3	2518	12518	4	11	6	0	-35		14			
3	4	3638	13638	7	8	12	12	-50		44			
3	5	4134	14134	4	5	1	0	-65	X	-93	X		
4	1	517	15517	2	8	8	1	-48		-78			

Sublot size has increased to 1000 tons from the previous 750 tons with a full lot equaling 5000 tons. For Urban projects, see the Special Provisions. All asphalt bag samples, (with the corresponding cold feed samples), and cores delivered to the branch laboratories are required to have S-M identification included with the samples, along with a copy of the contractor's

Superpave software results. The laboratories prefer to have a digital copy of the entire updated Superpave software sent to them each time a sample is delivered.

The “Ton to be Sampled” column indicates, that is the tonnage that should be in the truck from which the sample is taken.

For densities, if the contractor chooses to cut cores for the entire project, they should send the one indicated by the “Field Density” column to the branch lab for each lot. If they choose to use a gauge, they must send all the cores cut from lot 1 to correlate their gauge and every other core they cut from the project. The additional cores should be at a minimum, 1 for every 15 density tests with the gauge. Any density readings taken with a gauge that are below 90% must have a core cut at that location. Additionally, all recuts must be 5 cores and they must all be sent to the branch labs for verification. There are multiple “Distance from Edge” columns for varying width areas and is used to indicate the transverse location on the roadway to take field densities. The “Distance to Core” is the longitudinal distance ahead station, (positive number), or back station, (negative number), to the density location from the original HMA sample station. The “Recuts: Distance to Core” is the longitudinal distance for recuts from the original HMA sample station, if requested by the contractor within one day of the completion of a lot. Use the original “Distance to Edge” value for the recuts. If the contractor requests recuts, they must be used to calculate incentive/disincentive values for the entire lot.

The “FAA/CAA Cold Feed” column indicates the subplot that must have an accompanying cold feed sample taken and is the sample that must be delivered to the branch laboratories for verification testing. SPS does not require cold feed sampling.

“Joint Density” indicates the location where an additional density shall be taken for the subplot indicated. It shall be at the same station as the subplot density sample, but shall be taken 1” from the edge indicated on the RSS. “Out” is the shoulder side edge and “In” is the centerline side edge. There is a column on the Superpave software for this information and a separate pay factor is calculated for Joint Density. If the contractor chooses to use a gauge for Joint Densities, they must cut a joint core in Lot 1 to establish a correlation. Additional correlation check cores must be cut every 3rd lot to verify the gauge correlation value. All Joint Density cores shall be delivered to the branch labs for verification testing.

For any 0’ or full width densities, or Joint Densities taken with the gauge, the gauge shall be as shown below. Confined edge densities are taken 0” from the seam, unconfined densities can be taken up to 4” from the edge. Joint Densities are always taken a maximum 1” from the seam or edge.

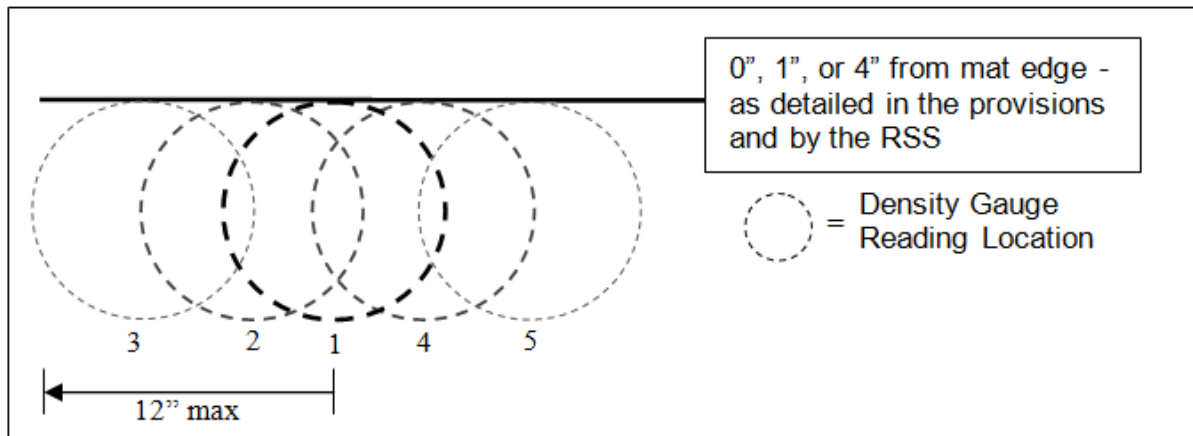


Figure 2: Asphalt density gauge reading pattern less than 6" from mat edge

The "TSR" column indicates when you need to notify the contractor to make Tensile Strength Ratio, (TSR) gyratory pucks to be sent to Lincoln. A S-M identification is required to be made by inspection staff and given to the contractor to send in with the TSR puck. TSR's are not required to be made for SPS mix.

2020 NDOT Asphalt Field Technician / Binder & Emulsion Sampler Recertification Quiz

1. When a PG binder or Asphalt Emulsion sample is taken, how much material is required to pass through the sample valve first?
 - a. None
 - b. One Quart
 - c. Two Quart
 - d. One Gallon

2. How often are Joint Densities required to be taken by the contractor?
 - a. 1 Joint Density every subplot or 1000 tons.
 - b. 1 Joint Density randomly per project.
 - c. 1 Joint Density for each Lot or 5000 tons.
 - d. 1 Joint Density per day of production.

3. When can the contractor diesel the truck beds?
 - a. Beginning of the day
 - b. Throughout the day
 - c. At the end of the day
 - d. All the above

4. Are Tensile Strength Ratio (TSR) sample pucks required for a SPS mix?
 - a) Yes
 - b) No

5. The frequency a binder sample should be obtained is:
 - a) every 200 tons of binder used or fraction thereof
 - b) every 1000 tons of binder used or fraction thereof
 - c) every 750 tons of asphalt used
 - d) on every tanker that delivers binder to the project